Remarks

Applicant respectfully request reconsideration of the present application in view of the foregoing amendments and the following remarks. Claims 1, 3-8, 10, 11, 17, 19 and 30-37 are pending in the application. Claims 1, 3-8, 10, 11, 17, 19 and 30-37 are rejected. Claims 2, 9, 12-16, 18, and 20-29 have previously been canceled without prejudice. No claims have been allowed. Claims 1, 7, 8, and 19 are independent.

Missing Form PTO-1449

Initially, Applicants respectfully request the return of the Form PTO-1449 included with the Information Disclosure Statement (IDS) filed December 6, 2006, marked to confirm the Office's consideration of the information submitted in that IDS. A copy of that form is enclosed herewith for the Office's convenience.

Telephonic Interview

Applicant wishes to thank the Examiner for extending a telephonic Examiner Interview on April 3, 2008. Claims 3, 4, 5, and Eidt were discussed. Although specific agreement was not reached, Applicant now presents reasoned arguments in light of the Examiner's discussion.

Claim Objections

The Action objects to claims 3, 8, 19, 33, and 35-37. For claims 3, 19, 33, and 35-37, the corrections are reflected in the claims as amended. For claim 8, the phrase "a state component comprising a representation of the first frame as a first class citizen..." reads as intended, and has not been modified.

Claim Rejections 35 USC § 102

The Action rejects claims 1, 3-8, 10-11, 17, 19 and 30-37 under 35 U.S.C. 102(b) as being anticipated by Eidt, U.S. Patent 6,295,640 (Eidt). For a 102(b) rejection to be proper, the applied art must show each and every element as set forth in a claim. (*See* MPEP § 2131.01). Applicants respectfully traverse.

Claim 1.

Claim 1 recites, in part:

wherein the executing program saves a first state of the program in the first state frame as a semantically accessible first state object, saves a second state of the program in the second state frame as a semantically accessible second state object, and then returns to the first state of the program by using the first state object.

For example, the specification recites:

An imperative program or a program model is a sequence of (possibly simultaneous) updates on state variables. In any step of the program, the current value of a variable is that of the most recent update looking backwards in the sequence. In a state frame, the state component calculates updates based on the current values of the variables. Making state first class in this setting, amounts to obtaining references to positions in the sequence backward from the current point of execution, and allowing a program execution to continue from a prior saved state, with an alternative sequence of further updates. Specification, page 4, lines 8-15.

As shown in Figure 4, a frame 402 is created at time t_0 to hold a copy of the variables of the program at a given moment. At time t_1, parallel processing or other divergent paths record state changes 404, 406 that occur after that moment. Thus, at 402, the program state is saved in a data structure (e.g., a state frame), changes made by a first thread are stored in frame 404, and changes made by a second thread are stored in frame 406. Specification, page 12, lines 1-6.

Eidt does not anticipate, e.g., the claim 1 language *"wherein the executing program saves a first state of the program in the first state frame as a semantically accessible first state object, saves a second state of the program in the second state frame as a semantically accessible second state object, and then returns to the first state of the program by using the first state object."*

To teach the above, the Action cites to Eidt, col. 7:52 to col 8:26, and Fig. 6. These sections do not teach, e.g., "state frames." Eidt does not discuss **state** frames. Rather, Eidt discusses **stack** frames; that is, data structures that hold the register values for a single subroutine or routine. [*See, e.g.,* Eidt at 3:31-33, "To support preemption during this window of time, in one embodiment the runtime environment of the present invention provides a **stack frame** that is divided into two half frames." (Emphasis added.)] Figure 6 and the sections cited by the Action

to teach or suggest the above claim language discuss a stack frame "divided into two half frames." [*Id.*] As Eidt does not discuss state frames, Eidt does not teach or suggest the claim 1 language, above, which includes the use of state frames.

As a separate reason for patentability, Eidt does not teach or suggest *a first state frame* and *a second state frame*. Rather, Eidt discusses two half **stack** frames, that together make a single **stack** frame. The system of Eidt allows dynamic partitioning of the registers between volatile (garbage collectible) and non-volatile (to be preserved) upon entering a subroutine "Because registers can change partition dynamically, a window of time can exist during which the contents of the registers and partitioning assignments are not consistent." [Eidt, 3:22-24.] To avoid this inconsistency, Eidt discusses creating a single stack frame as two half frames—the first is created at the beginning of a subroutine call, while the second is created after any dynamic partitioning has finished to provide "a window of time in which to change non-volatile register partitioning upon entering a sub-routine." [Eidt, 6:38-40. *Also see Id.* at 3:10-36.]

Applicants believe that the action cites to the first half stack frame to teach or suggest the claim 1 language "representation of a second state of the executing program comprising state changes made by the executing program after the first state frame is created and the second state frame includes a pointer back to the first state frame...." However, half of a stack frame is not a "second state frame," it is not even a second **stack** frame, rather it is only portion of a stack frame.

Applicants believe that the action cites to the second half of the stack frame to teach or suggest the claim 1 language "a third state frame including a representation of state changes made by the executing program after a fork method creates the third state frame, and the third state frame includes a pointer back to the second frame." This second half of the stack frame is not even, at a minimum, a whole **stack** frame, let alone a state frame. The first half of the stack frame (used to show the second state frame) and the second half of the stack frame (used to show the third state frame) at the most, describes a single stack frame. They together does not suggest a completely different structure, "a **state** frame," let alone two of such different structures, "a second **state** frame" and "a third **state** frame."

Moreover, Eidt does not teach or suggest the italicized portion "a representation of state changes made by the executing program *after a fork method creates the third state frame*" Applicants have carefully reviewed the sections of Eidt said to discuss the above language can

find no discussion of "a representation of state changes made by the executing program *after a fork method creates the third state frame*"

For at least the above reasons, claim 1 is in condition for allowance.

Accordingly, favorable reconsideration and withdrawal of the rejection of independent claim 1 under 35 U.S.C. § 102(b) are respectfully requested.

In the event that the Office maintains the rejection of claim 3 under 35 U.S.C. §102, Applicant respectfully requests that the Office, in the interests of compact prosecution, identify on the record and with specificity sufficient to support a prima facie case of anticipation, where in the Eidt patent the subject feature of claim 1 of "a representation of state changes made by the executing program *after a fork method creates the third state frame*" is alleged to be taught.

Claim 3.

Eidt fails to each or suggest the claim 3 language: "a fourth state frame which includes changes made by the executing program after the fork method creates the third state frame and after a set method returns the executing program to the state of the second state frame...." Applicants have carefully reviewed the sections of Eidt said to teach or suggest the above language and can find no discussion of, e.g., *a fork method [which] creates the third state frame.* Applicants can also find no discussion of *a set method [which] returns the executing program to the state of the second frame.* Thus, for at least these reasons, Eidt cannot anticipate claim 3.

Accordingly, favorable reconsideration and withdrawal of the rejection of claim 3 under 35 U.S.C. §102 is respectfully requested.

In the event that the Office maintains the rejection of claim 3 under 35 U.S.C. §102, Applicant respectfully requests that the Office, in the interests of compact prosecution, identify on the record and with specificity sufficient to support a prima facie case of anticipation, where in the Eidt patent the subject feature of claim 3 of "a fourth state frame which includes changes made by the executing program after the fork method creates the third state frame" is alleged to be taught, and where the subject feature of claim 3 of "a fourth state frame which includes changes made by the executing program ...after a set method returns the executing program to the state of the second state frame..." is alleged to be taught.

Claim 5.

Eidt fails to each or suggest the claim 5 language: "The computer readable medium of claim 3 wherein *a first thread* of the executing program makes state changes copied in the second state frame, and *a second thread* of the executing program makes state changes copied into the third state frame." Applicants have carefully reviewed the sections of Eidt said to teach or suggest the above language and can find no discussion of, e.g., *a first thread* and *a second thread.* Thus, for at least these reasons, Eidt cannot anticipate claim 5.

Accordingly, favorable reconsideration and withdrawal of the rejection of claim 5 under 35 U.S.C. §102 is respectfully requested.

In the event that the Office maintains the rejection of claim 5 under 35 U.S.C. §102, Applicant respectfully requests that the Office, in the interests of compact prosecution, identify on the record and with specificity sufficient to support a prima facie case of anticipation, where in the Eidt patent the subject features of claim 5 of "*a first thread* of the executing program makes state changes copied in the second state frame, and *a second thread* of the executing program makes state changes copied into the third state frame." are alleged to be taught.

Claim 30.

Eidt fails to each or suggest, e.g., the claim 30 language: *wherein the fourth state frame further comprises a reference pointer with a value indicating how many frames point back to it, and wherein if the value of the reference pointer is one, then the executing program combines the fourth state frame with the fifth state frame.*

Applicants have carefully reviewed the sections of Eidt said to teach or suggest the above language and can find no discussion of, e.g., *a reference pointer with a value indicating how many frames point back to it.* Therefore, Eidt does not also teach or suggest the further limitations *wherein if the value of the reference pointer is one, then the executing program combines the fourth state frame with the fifth state frame.* Thus, for at least these reasons, Eidt cannot anticipate claim 30.

Accordingly, favorable reconsideration and withdrawal of the rejection of claim 5 under 35 U.S.C. §102 is respectfully requested.

In the event that the Office maintains the rejection of claim 5 under 35 U.S.C. §102, Applicant respectfully requests that the Office, in the interests of compact prosecution, identify

on the record and with specificity sufficient to support a prima facie case of anticipation, where in the Eidt patent the subject features of claim 30 of *"a reference pointer with a value indicating how many frames point back to it, and wherein if the value of the reference pointer is one, then the executing program combines the fourth state frame with the fifth state frame"* are alleged to be taught.

Claims 6 and 31.

Additionally, claims 6and 31 depend from claim 1. In the interest of brevity, Applicants do not belabor the language of each of the dependent claims, but points out that they recite novel and nonobvious features allowable over Eidt. Further, since they depend from claim 1, they should be allowed for at least the reasons stated for claim 1. Claims 6and 31 should be allowable for at least the reasons given. Such action is respectfully requested.

Claim 7.

Eidt does not anticipate, e.g., the claim 7 language below:

> receiving via an application programming interface a request to create a state save;
> in response to the request, saving a first representation of a state of an executing program comprising copying state of the program required to return to the moment the state was saved as a first state frame;
> maintaining a second representation of *subsequent state* comprising changes made to the state of the executing program *after* the first representation in the current state frame. [Emphasis added.]

Eidt does not discuss **state** frames. Rather, Eidt discusses **stack** frames, that is data structures that hold the register values for a single subroutine or routine. [*See, e.g.,* Eidt at 3:31-33, "To support preemption during this window of time, in one embodiment the runtime environment of the present invention provides a **stack frame** that is divided into two half frames." (Emphasis added.)] Figure 6 and the sections cited by the Action to teach or suggest the above claim language discuss a stack frame "divided into two half frames." [*Id.*] As described with reference to claim 1, Eidt discusses stack frames, not state frames, and so cannot anticipate claim 7.

As a separate reason for patentability, The Office cites to the entire stack frame created from the two half stack frames to anticipate "a first state frame." [Eidt, 8:55-56, reciting, in part, "The combination of the first half frame and the second half frame result in a stack frame for calling subroutine 610." To anticipate "maintaining a second representation of *subsequent* state comprising changes made to the state of the executing program after the first representation in the current state frame" the Office cites to the process of building a single stack from two half frames. [Eidt, 7:14-8:43.] However, in claim 7, the second representation comprises "*subsequent* state comprising changes made to the state of the executing program *after* the first representation.

The stack frame of Eidt does not comprise "changes made to the state of the executing program after the first representation," as the stack frame does not have changes made to the state of an executing program. Rather the single stack frame of Eidt is created out of two half frames to "establish the new contents of the non-volatile registers according to a callee routine." [Eidt, 7:24-26.] That is, the two half frames doesn't save subsequent program state at all; but, rather are used to allow a partition between volatile and non-volatile registers to be moved. [*See* Eidt, 6:38-40.] As a stack frame of Eidt does not store subsequent program state, Eidt does not anticipate, e.g., "maintaining a second representation of *subsequent* state comprising changes made to the state of the executing program after the first representation in the current state frame."

Accordingly, for at least the above reasons, favorable reconsideration and withdrawal of the rejection of independent claim 7 and its dependent claim 17 under 35 U.S.C. § 103 are respectfully requested.

Claims 32-34.

Additionally, claims 32-34 depend from claim 7. In the interest of brevity, Applicants do not belabor the language of each of the dependent claims, but points out that they recite novel and nonobvious features allowable over Eidt. Further, since they depend from claim 7, they should be allowed for at least the reasons stated for claim 7. Claims 32 and 34 should be allowable for at least the reasons given. Such action is respectfully requested.

Claim 8.

Amended independent claim 8 recites in part:

> a state component comprising a representation of the first <u>state</u> frame as a <u>programmer-accessible named object</u>.... [Emphasis added.]

Applicants respectfully submit that Eidt, at a minimum, does not teach or suggest the above amended language.

The amendment, above, is supported in the Specification and figures as filed. For example, the Specification reads:

> A state object (or function) is implemented as a feature of ASML, or added as a language construct to any programming language, or it can be a class introduced into a class library for integration into any programming language. Further, the concept can be added to the overall framework (e.g., CLR), or java runtime. Further, the component can be integrated into the system of any computer, so it can be called through its API by any language or other program, as part of the runtime library, and/or dynamically linked as needed. In one sense, being a first-class citizen means being semantically accessible by a program or modeling language. An instantiated state mechanism or object is given a name that can be referred to in a program. For example, in Table 2, the state object "s" is created, and then later, possibly used in some error condition test to reset the program to the state at the time "s" was declared. In this example, "State.Fork( )" saves the state in "s", and "s.set ( )" returns the program to the state saved at "s".

Table 2
State s = State.Fork ( );
X = 3
Y = X + 2
X = X + Y
*
*
*
s.set ( );

> With previous rollback techniques, a set of values would have to be explicitly identified and written to a log so they could later be restored by systematically unwinding or rolling back one at a time.
> Specification, page 9, lines 1-17.

Applicants have carefully reviewed Eidt and can find no discussion of the amended language, e.g., *a state component comprising a representation of the first <u>state</u> frame as a <u>programmer-accessible named object</u>*. Thus, for at least these reasons, Eidt cannot anticipate claim 8.

Accordingly, favorable reconsideration and withdrawal of the rejection of claim 8 under 35 U.S.C. §102 is respectfully requested.

Claims 10-11.

Additionally, claims 10-11 depend from claim 8. In the interest of brevity, Applicants do not belabor the language of each of the dependent claims, but points out that they recite novel and nonobvious features allowable over Eidt. Further, since they depend from claim 8, they should be allowed for at least the reasons stated for claim 8. Claims 10-11 should be allowable for at least the reasons given. Such action is respectfully requested.

Claim 19.

Amended claim 19 recites:

19.   A <u>computerized</u> method comprising computer executable instructions for performing a method comprising:

receiving a request from a method, which takes as a parameter a state object, to create a saved state of an executing model;

saving a first representation of a state of the executing model as a first state frame;

saving a first representation of the state frame as the state object;

creating a blank state frame with a backward link to the first state frame as a second state frame;

maintaining, in the second state frame, a second representation of state changes made by the executing model after the first representation as the state changes occur; and

reinstating the executing model state to the state of the first representation using the state object. [Emphasis added.]

Not to belabor the point, but using the same reasoning as found in claims 1 and 7, it can be seen that Eidt does not anticipate claim 19.

Accordingly, favorable reconsideration and withdrawal of the rejection of independent claim 19 under 35 U.S.C. § 103(a) are respectfully requested.

Claims 35-37.

Additionally, claims 35-37 depend from claim 19. In the interest of brevity, Applicants do not belabor the language of each of the dependent claims, but points out that they recite novel and nonobvious features allowable over Eidt. Further, since they depend from claim 19, they

should be allowed for at least the reasons stated for claim 19. Claims 35-37 should be allowable for at least the reasons given. Such action is respectfully requested.

Request for Interview

If any issues remain, the Examiner is formally requested to contact the undersigned attorney prior to issuance of the next Office action in order to arrange a telephonic interview. It is believed that a brief discussion of the merits of the present application may expedite prosecution. Applicants submit the foregoing formal Amendment so that the Examiner may fully evaluate Applicants' position, thereby enabling the interview to be more focused.

This request is being submitted under MPEP § 713.01, which indicates that an interview may be arranged in advance by a written request.

Conclusion

The claims should be allowable. Such action is respectfully requested.

Respectfully submitted,

KLARQUIST SPARKMAN, LLP

One World Trade Center, Suite 1600
121 S.W. Salmon Street
Portland, Oregon 97204
Telephone: (503) 595-5300
Facsimile: (503) 595-5301

By   /Genie Lyons/
       Genie Lyons
       Registration No. 43,841